semiconductor by an organometallic compound vapor phase epitaxy, comprising:

setting a supplying ratio of silicon (Si) to NH_3 in a reaction chamber during said vapor phase epitaxy at a desired value in a range from 8.6×10^{-10} to 2.6×10^{-8}, so as to control conductivity (1/resistivity) of said gallium nitride group compound semiconductor at a desired value such that said conductivity increases with an increase of said supplying ratio.

55. (Twice Amended) A method for producing a gallium nitride group compound semiconductor by an organometallic compound vapor phase epitaxy, comprising:

setting a supplying ratio of silicon (Si) to gallium (Ga) in a reaction chamber during said vapor phase epitaxy at a desired value in a range from greater than 0.1 to 3 as converted values so as to control a carrier concentration of said gallium nitride group compound semiconductor at a desired value such that said carrier concentration increases with increasing of said supplying ratio,

wherein said values 0.1 and 3 are the values obtained from gas flow rates, an amount of said gallium (Ga) being converted into a flow rate of hydrogen bubbling trimethyl gallium (TMG) at a temperature of -15°C and an amount of said silicon (Si) being converted into a flow rate of a gas diluted to 0.86 ppm.

56. (Twice Amended) A method for producing a gallium nitride group compound semiconductor by an organometallic compound vapor phase epitaxy, comprising:

setting a supplying ratio of silicon (Si) to NH_3 in a reaction chamber during said vapor phase epitaxy at a desired value in a range from 8.6×10^{-10} to 2.6×10^{-8}, so as to control a carrier concentration of said gallium nitride group compound semiconductor at a desired value such that said carrier concentration increases with an increase of said supplying ratio.